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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/922,324	08/02/2001	Daphne Koller	STAN0001	7457

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CRAWFORD MAUNU PLLC  
1270 NORTHLAND DRIVE  
SUITE 390  
ST PAUL, MN 55120

EXAMINER
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TRUONG, CAM Y T

ART UNIT	PAPER NUMBER
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2172

DATE MAILED: 12/30/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/922,324

Applicant(s)

KOLLER ET AL.

Examiner

Cam Y T Truong

Art Unit

2172

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 and 13-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.                      6) ☐ Other:

**DETAILED ACTION**

1. Claims 1-15 are pending in this Office Action.

***Election/Restrictions***

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-8 are drawn to construct a probabilistic relational model, classified in class 707, and subclass 3.
- II. Claim 9-12 is drawn to provide relationship between objects in relational schema, classified in class 707, and subclass 103.
- III. Claims 13-15 are drawn to provide link uncertainty in probabilistic relational models, classified in claims 707, subclass 10.

3. Inventions I, II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, the constructing a probabilistic relational model in invention I can be used in estimating the selectivity of queries in a relational database. The providing relationship between objects in relational schema in invention II can be used in extracting an entire relational schema from training database. Providing link uncertainty in probabilistic relational models is used in computing sufficient statistics. See MPEP § 806.05(d).

4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

5. Applicants are advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

6. During a telephone conversation with Mr. LeRoy D. Maunu on 12/18/03 a provisional election was made with traverse to prosecute the invention of Group II, 9-12. Affirmation of this election must be made by applicant in replying to this Office action. Claim 1-8, 13-15 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

#### **Abstract**

7. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

#### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2172

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Agarwal et al (or hereinafter "Agarwal") (USP 6401083) in view of Lakshmi et al (or hereinafter "Lakshmi") (USP 6108648).

As to claim 9, Agarwal teaches the claimed limitations:

"providing a parameter estimation task by: inputting a relational schema that specifies a set of classes, having attributes associated with said classes having relationships between objects in different classes" as table 402 has a set of object types such as object\_type 1 and the optimizer object type Stats1. These object types are associated with attributes 408. Object field 406 identifies the object\_type 1 as the family of objects, which is being registered. The Stats 1 is associated with all instances of object\_type 1. An optimizer object type can be defined for objects on the database system. If the optimizer object type is directed to entities for which statistics are to be collected, then the optimizer object type is defined having two statistics function. The above information shows that the system provides an estimation task by inputting object types into a table 402. Table 402 is represented as a relational schema. Object types are represented as classes (col. 10, lines 27-40; col. 9, lines 30-35);

"providing a fully specific instance of said schema in the form of a training database" as a statistic table 410 in typical database systems can be used to store the results of executing a non-native statistics collection function. Statistics table 410

Art Unit: 2172

comprises an object field 414 that identifies the object for which statistics have been collected. Since the statistics table stores the results of executing a non-native statistics collection function, thus, the identified object for which statistics have been collected is provided in the form of a training database (col. 10, lines 50-65; col. 9, lines 25-30).

Agrawal does not explicitly teach the claimed limitation "performing a structure learning task to extract an entire PRM solely from said training database".

Lakshmi teaches providing dynamic training to the neural network, the user selects the particular database and table for training the neural network. During operation, selectivity statistics relating to the chosen selectivity function are gathered by tracing actual application queries issued by users. This table can contain the resulting weight and bias values of each neural network, thus this table is represented as PRM. When the user selects the table, it means that the table is extracted from database (col. 7, lines 24-27; col. 3, lines 20-30).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Lakshmi's teaching of providing dynamic training to the neural network, the user selects the particular database and table having bias values for training the neural network to Agrawal's system in order to allow users to perform operations such as locating, adding, deleting and updating data stored in the table of database.

Art Unit: 2172

10. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agarwal et al (or hereinafter "Agarwal") (USP 6401083) in view of Lakshmi et al (or hereinafter "Lakshmi") (USP 6108648) and Freund et al (or hereinafter "Freund") (USP 5819247).

As to claim 10, Agrawal and Lakshmi disclose the claimed limitation subject matter in claim 9, except the claimed limitation "the step of specifying which structures are candidate hypotheses". Freund teaches the data structure is used to implement strong hypothesis and the weak hypotheses. Since each strong hypothesis is made up of weak hypothesis; thus, a strong hypothesis is represented as candidate hypothesis (col. 5, lines 20-25).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Freund's teaching of each strong hypothesis is made up of weak hypothesis to Agrawal's system and Lakshmi's system in order to compute probability of the candidate training data entry accurately.

As to claim 11, Agrawal and Lakshmi disclose the claimed limitation subject matter in claim 10, except the claimed limitation "the step of evaluating different candidates hypotheses relative to input data". Freund teaches evaluating the weak hypothesis and strong hypothesis relative to the training data (col. 3, lines 35-40; col. 4, lines 28-30).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Freund's teaching of evaluating the weak hypothesis

and strong hypothesis relative to the training data to Agrawal's system and Lakshmi's system in order to make strong hypothesis.

11. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Agarwal et al (or hereinafter "Agarwal") (USP 6401083) in view of Lakshmi et al (or hereinafter "Lakshmi") (USP 6108648) and Freund et al (or hereinafter "Freund") (USP 5819247) and Hillis (USP 6055523).

As to claim 12, Agrawal, Lakshmi, Freund disclose the claimed limitation subject matter in claim 11, except the claimed limitation "the step of searching hypothesis space for a structure having a high score". Hillis teaches search through the space of possible hypotheses for the purpose of finding a good hypothesis by using Genetic Algorithm. A good hypothesis is one that has a score within some acceptable range for specific application of the tracker. It means that good hypothesis has a high score the above information shows that the system search hypothesis for a structure having high score (col. 4, lines 30-45).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Hillis's teaching of search through the space of possible hypotheses for the purpose of finding a good hypothesis by using Genetic Algorithm. A good hypothesis is one that has a score within some acceptable range for specific application of the tracker to Agrawal, Lakshmi, and Freund's system in order to accurately track one or more object over time and determine the state of object.



***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure

Kohavi et al (USP 6278464).

***Contact Information***

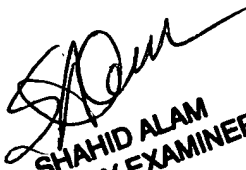
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cam-Y Truong whose telephone number is (703-605-1169). The examiner can normally be reached on Mon-Fri from 8:00AM to 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene, can be reached on (703-305-9790). The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703-305-3900).

Cam-Y Truong

12/11/03

  
SHAHID ALAM  
PRIMARY EXAMINER